

REMARKS

Claims 1-60 were pending. Claims 1, 10, 11, 18, 28, 29, 52, and 60 have been amended. Claims 7-9, 20-27, 29, 32-51, and 55-60 have been withdrawn. Claims 1-60 are pending.

1. Rejection under 35 U.S.C. §102(e) based on Ueda:

Claims 1-6, 10-11, 18-19, 28, 30-31, and 52-54 stand rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Pat. No. 6,122,009 to Ueda. This rejection is respectfully traversed.

Claim 1 recites “a cover for an image sensor array,” the cover including “a plate formed of substantially transparent material and secured adjacent to and covering the image sensor array, said sensor array being sealed by said plate.” The plate has “a plurality of surfaces forming a lensing structure, such that at least one of said plurality of surfaces is contoured into a lensing surface capable of changing imaging characteristics.”

The reference to Ueda discloses an image-forming lens 4 supported by a lens holder 2 above an image sensor array chip 12 disposed on a substrate 1. Substrate 1 is joined to lens holder 2 with a filler 20, as shown in Fig. 6. The structure of the lens holder 2 joined to the substrate 1 encloses the bare chip 12, and thereby achieves the Ueda reference’s stated objective of forming an apparatus having reduced weight and cost. The apparatus disclosed in Figs. 6 and 7 of the Ueda reference omits the package 403B of the prior art apparatus shown in Fig. 3. See col. 7, line 64 to col. 8, line 1. The prior cover glass 403C has been omitted as well, since the Ueda reference replaces the cover glass with a housing sealed to a substrate. The reference to Ueda does not disclose (and instead teaches directly away from) “a cover for an image sensor array,” the cover including “a plate formed of substantially transparent material and secured adjacent to and covering the image sensor array,” the “sensor array being sealed by said plate.” Indeed, the lens 4, which the Examiner equates to the recited plate, is supported by leg portions 11 away from, not “secured adjacent to,” the bare imager chip. Consequently, the *plate* does not

“*cover*” the image sensor array, and the *plate* does not *seal* the sensor array. Claim 1, and its dependent claims 2-6 and 10-19, are submitted as patentable over the cited reference to Ueda.

Claim 28 recites “a method of making an image sensor array having a lensing cover plate for imaging improvement or enhancement function.” The method includes “forming a lensing structure on a lensing surface of a flat, substantially transparent cover plate by contouring said lensing surface of the cover plate into a lensing element to form a lensing cover plate,” and “covering said image sensor array with said lensing cover plate, said image sensor array being sealed by said cover plate.”

The reference to Ueda discloses making an image sensor array supported on a substrate 1 and enclosed by a lens holder 2 joined to the substrate 1. As noted above, Ueda discloses that the lens 4 is supported on leg portions 11 away from a bare imager chip. Ueda deliberately eliminates the prior art cover glass, and relies instead on joining lens holder 2 to substrate 1 to enclose the chip. Ueda does not disclose “forming a lensing structure on a lensing surface of a flat, substantially transparent cover plate by contouring said lensing surface of the cover plate into a lensing element to form a lensing cover plate,” and “covering said image sensor array with said lensing cover plate, said image sensor array being sealed by said cover plate.” Claim 28, and its dependent claims 29-31, are submitted as patentable over the cited reference to Ueda.

Claim 52 recites a method of making a camera system that includes “contouring a portion of a flat cover plate to form a cover plate having a lensing structure,” “covering an imaging array with said cover plate, said cover plate being placed in an optical path of said camera system,” and “bonding the cover plate to an assembly to seal the imaging array.”

The reference to Ueda discloses making a camera system in which a lens 4 is supported by leg portions 11 above a bare imager chip 12. The chip 12 is enclosed by a lens holder 2 joined to a substrate 1, thereby eliminating the prior art package assembly

covered by a cover glass. Ueda does not anticipate “contouring a portion of a flat cover plate to form a cover plate having a lensing structure,” “covering an imaging array with said cover plate, said cover plate being placed in an optical path of said camera system,” and “bonding the cover plate to an assembly to seal the imaging array.” Claim 52, and its dependent claims 53 and 54, are submitted as patentable over the cited reference to Ueda.

2. Rejection under 35 U.S.C. §102(b) based on Izumi et al.:

Claims 1, 10, 12, 13, 28, 30, 31, and 52-54 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Pat. No. 5,400,072 to Izumi et al. This rejection respectfully is traversed.

Claim 1 recites “a cover for an image sensor array,” the cover including “a plate formed of substantially transparent material and secured adjacent to and covering the image sensor array, said sensor array being sealed by said plate.” The plate includes “a plurality of surfaces forming a lensing structure, such that at least one of said plurality of surfaces is contoured into a lensing surface capable of changing imaging characteristics.”

The reference to Izumi et al. discloses a video camera in which lenses L1-L4 are assembled into a lens holder 1. A bare image sensor chip 64 is enclosed in a cylindrical case, a cylindrical base member, and a transparent cap over the lens assembly. The Examiner proposes that lens L4 is “a cover for an image sensor array,” but lens L4 is supported in the lens holder 1. Lens L4 is not “secured adjacent to and covering” the bare image sensor array, and the sensor array is not “sealed” by lens L4. The reference to Izumi et al. does not teach or suggest a cover including “a plate formed of substantially transparent material and secured adjacent to and covering the image sensor array, said sensor array being sealed by said plate.” Thus, Izumi et al. does not teach the “plate having a plurality of surfaces forming a lensing structure, such that at least one of said plurality of surfaces is contoured into a lensing surface capable of changing imaging characteristics.” Claim 1, and its dependent claims 2-6 and 10-19, are submitted as patentable over the cited reference to Izumi et al.

Claim 28 recites “a method of making an image sensor array having a lensing cover plate.” The method includes “forming a lensing structure on a lensing surface of a flat, substantially transparent cover plate by contouring said lensing surface of the cover plate into a lensing element to form a lensing cover plate,” and “covering said image sensor array with said lensing cover plate such that said image sensor array is sealed by said cover plate.”

Izumi et al. discloses making a camera in which lenses L1-L4 are assembled into a lens holder 1. A bare image sensor chip 64 is sealed by a cylindrical case, a cylindrical base member, and a transparent cap over the lens assembly. See col. 31, lines 3-7. The Izumi et al. reference does not teach or suggest a lensing cover plate provided by “forming a lensing structure on a lensing surface of a flat, substantially transparent cover plate by contouring said lensing surface of the cover plate into a lensing element.” Further, Izumi et al. does not disclose “covering said image sensor array with said lensing cover plate such that said image sensor array is sealed by said cover plate.” Claim 28, and its dependent claims 29-31, are submitted as patentable over the cited reference to Izumi et al.

Claim 52 recites a method of making a camera system that includes “contouring a portion of a flat cover plate to form a cover plate having a lensing structure,” “covering an imaging array with said cover plate, said cover plate being placed in an optical path of said camera system,” and “bonding the cover plate to an assembly to seal the imaging array.”

Izumi et al. discloses making a video camera in which a bare imaging chip 64 is enclosed by a cylindrical case, a cylindrical base member, and a transparent cap over the lens assembly. Lens L4 is supported with lenses L1-L3 in a lens holder 1. Izumi et al. does not teach or suggest “contouring a portion of a flat cover plate to form a cover plate having a lensing structure,” “covering an imaging array with said cover plate, said cover plate being placed in an optical path of said camera system,” and “bonding the cover plate to an assembly to seal the imaging array.” Claim 52, and its dependent claims 53 and 54, are submitted as patentable over the cited reference to Izumi et al.

3. Rejection under 35 U.S.C. §103 based on Izumi et al. and Ogihara:

Claims 14-17 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Izumi et al. in view of U.S. Pat. No. 3,620,149 to Ogihara. This rejection respectfully is traversed.

Claims 14-17 depend from claim 1, and are submitted as patentable over Izumi et al. Ogihara does not cure the deficiencies of Izumi et al. Ogihara has been cited to supply a threaded lens attachment structure. Ogihara discloses a conventional film camera, and does not teach or suggest “a cover for an image sensor array,” the cover including “a plate formed of substantially transparent material and secured adjacent to and covering the image sensor array, said sensor array being sealed by said plate,” the “plate having a plurality of surfaces forming a lensing structure, such that at least one of said plurality of surfaces is contoured into a lensing surface capable of changing imaging characteristics.” Claim 1, and its dependent claims 14-17, are submitted as patentable over the cited references to Izumi et al. and Ogihara.

Claims 14-17 are further distinguished from the cited prior art references to Izumi et al. and Ogihara. Claims 14-17 depend from claim 10, which recites that a “lensing structure includes a mounting structure formed on the lensing surface of the plate, said mounting structure being arranged to secure additional lensing elements to the plate.” The reference to Izumi et al. discloses that lens L4 is secured in a lens holder 1. Lens L4 includes ribs 21 which maintains the required separation between lenses L3 and L4. Neither the Izumi et al. reference nor the Ogihara reference teaches or suggests a cover plate having a lensing structure, the lensing structure including a “mounting structure formed on the lensing surface of the plate” and “arranged to secure additional lensing elements to the plate.”

Applicant notes that withdrawn claims 7-9 depend from claim 1, claim 29 depends from claim 28, and claims 55 and 56 depend from claim 52. Should claims 1, 28, and 52 be found allowable, claims 7-9, 29, and 55-56 respectively should be allowable as

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well. Reconsideration of the withdrawal of claims 7-9, 29, and 55-56 respectfully is requested.

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application to issue.

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Respectfully submitted,

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